

cartilage-pit; they are triangular instead of leaf-like, and slightly incline inwards instead of being erect.

*M. truncata* of Searles Wood, from the Coralline Crag, is a comparatively large, squarish, and flattened shell, and has long cardinal teeth.

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L.—On *Hyalonema mirabilis*, in reply to Dr. Gray.

By Dr. BOWERBANK.

IN the 'Annals and Magazine' for October 1866, p. 287, Dr. Gray has published a note "On the 'Glass-rope' *Hyalonema*," in which he has criticised the short observations on that genus in the first volume of my Monograph of the British *Spongiadae*. Those observations were never meant to be taken as a history of the anatomy and physiology of that curious animal, but simply as an introduction to the genus *Hyalonema* among the Sponges, and as a reason for figuring the numerous interesting forms of its siliceous spicula among those of various other species of Sponges. The detailed account of these organs, except as far as it was necessary to illustrate the specimens selected for figuring, was reserved for a paper shortly to be published, and especially devoted to a minute investigation of the whole of the organization of the animal, including the basal mass of sponge-tissue, the spiculous axis, or rope, and its coriaceous envelope, with a view to establish the organic unity of these parts as portions of one and the same animal.

The criticisms of Dr. Gray are therefore somewhat premature; and in some respects he has so far misrepresented my opinions as to render a reply to his observations necessary. But in thus answering his remarks it must be understood that I shall not at present attempt to decide the questions in dispute, as to whether it be a single animal or two animals, the one parasitical on the other, and that I shall reserve the structural proofs and the reasonings necessary to such a decision for a paper on the subject, which I have long had in preparation and which I hope shortly to be able to publish.

In page 289 Dr. Gray writes, "Again, the specimens being sunk in a sponge that had a flat base by which it was attached to some marine body, I concluded that the natural habit of the animal was to develop itself in a sponge, so as to support itself in an erect position; and this idea was strengthened by finding that the sponge near the part where the coral perforated it was of a more condensed and harder texture than the other parts of it. I concluded that there was a kind of mutual understanding (such as we often find between animals that are parasitic on one

another) between the sponge and the coral." But, if this theory of Dr. Gray's be correct, the "mutual understanding" must have been carried very much further than the Doctor supposes—even to the extent of sharing the spicula of their respective skeletons between them, as the remarkable cylindro-cruciform siliceous spicula, so abundant in the inner coat of the envelope of the siliceous rope of spicula, are still more so in the body of the basal sponge. This uniformity in their anatomical structure, to an unprejudiced naturalist, would seem rather to identify them as parts of the same animal than of two distinct species, however closely attached by ties of "mutual understanding." But the truth appears to me to be, that, although Dr. Gray has had the British Museum specimen with the spongy base under his care for many years, he has never yet made a careful microscopical examination of the tissues of its basal mass.

In page 291 he writes, "In 1860 Professor Max Schultze published the elaborate essay above quoted; and he regards the rope of siliceous spicula as part of a sponge, and the polypes as parasitic on it, calling the polypes *Polythoa fatua mihi*;" and he continues, "Dr. Bowerbank, adopting the same view, in his lately published work on British Sponges, gives the following as the generic character of the genus *Hyalonema*." This assertion is incorrect, as I have always maintained that the siliceous axis, its envelopment, and the basal sponge were all parts of the same animal, as the following generic characters I have proposed will prove.

#### HYALONEMA, Gray.

"Skeleton an indefinite network of siliceous spicula, composed of separated elongated fasciculi, reposing on continuous membranes, having the middle of the sponge perforated vertically by an extended fasciculus of single, elongated, and very large spicula forming the axial skeleton of a columnal cloacal system" (vol. i. p. 196).

I will not at present follow the author of the paper through all his reasonings on the subject, as mere opinion or mere argument form by no means the best mode of settling such disputes, and as I shall shortly publish a full detail of my examinations of the anatomy and physiology of *Hyalonema*, in which, I trust, I shall be able to prove that the basal sponge, the spiral axis, and its coriaceous envelope are really parts of one and the same animal. There is another misrepresentation which I cannot allow myself to pass without comment. Dr. Gray, in page 292, writes, "Unfortunately Dr. Bowerbank does not seem to have considered it necessary to examine the specimens, but simply copies the plate, or to examine other genera of corals; or

he would have found that what he calls *oscula* are, as I called them in the description he quotes, polype-cells containing polypes having tentacles and all the internal organization, including a distinctly plicated stomach, exactly like the zoanthoid polype named *Polythoa* or *Corticaria*." How the stomach of the supposed polype can be like that of *Corticaria*, a genus of Coleopterous insects, is beyond my comprehension; but it may be that the author meant to write *Corticifera*, a generic name of Lesueur for *Zoanthus*. The assertion that I did not seem to have considered it necessary to examine the specimens is also inaccurate; and it must have escaped the memory of Dr. Gray that in 1860 the specimens alluded to were, by his direction, placed in my hands for examination, that for two days, during nearly four hours of each, I was engaged in the Entomological Department in a careful microscopical examination of their anatomical structures, and that a portion of the results of those examinations were published in the second part of my paper "On the Anatomy and Physiology of the Spongiadæ" in the 'Philosophical Transactions' for 1861, and were illustrated by no less than thirteen figures in two of the plates accompanying that Part. In plate xxxi., figures 3, 4, 5, 6, and 7, and in plate xxxvi. figures 12, 20, 30, 34, 35, 36, 37, and 38, are all from the specimen of *Hyalonema* in the British Museum, excepting fig. 7, plate xxxi., which is from the specimen in the Bristol Museum. I did not deem it necessary to refigure the specimen in the British Museum, as it had been so accurately and beautifully drawn by Mr. Ford for the 'Proc. Zool. Soc.' for 1857, plate ix. Radiata.

Dr. Gray blames me for supposed hasty conclusions and inaccuracies, and at the same time exhibits the like symptoms in his own observations: thus in page 288 he writes *Halichondra* in place of *Halichondria*, *Alcyonellum* (p. 293) instead of *Alcyoncellum*, and *Euplatella* in place of *Euplectella*, and, throughout the whole of the paper, *Polythoa*\* apparently instead of *Polyzoa*, or of *Palythoa*, Lamouroux, a genus of Zoanthidæ.

Dr. Gray adopts the idea of M. Barboza du Bocage, that the protuberant bodies from the bark of *Hyalonema* are allied to *Zoanthus*, and that they bear on their summits the tentacles of the polypes; and the figure of those parts by M. Barboza du Bocage in the 'Proceedings of the Zoological Society' for 1864, plate xxxiii. fig. 3, if he thinks fit to assume that as a correct representation of tentacula, would seem to justify him in that idea; but a little consideration would have informed him that the tentacles of polypes are always situated on the oral portion of the animal, and not on the surrounding portions of the

\* [For this mistake the printer is to blame. It should have been *Palythoa* throughout, instead of *Polythoa*.—ED.]

polypidom; and it may be observed that Dr. Gray, in p. 292, himself designates the protuberances which I have termed oscula as "polype-cells," and not as polypes. I have abundant specimens of *Corticifera*, and have had several of the polype-cases of *Zoanthus Couchii* in my possession, and in all my examinations of them I could never ascertain that the polypidoms of either secreted siliceous spicula. These bodies, in every case that has come under my observation, have been formed of aggregated adventitious materials; principally sand, with occasionally a stray spiculum amidst the heterogeneous material adhering to, and incorporated in, the fleshy cases of the polypes.

Dr. Gray is also mistaken in his belief that I have not paid sufficient attention to the structure of corals to enable me to escape such errors of judgment as he imputes to me; but the truth is, that in the course of the preparation of my paper "On the Organic Tissues in the Bony Structure of the Corallidæ," published in the 'Philosophical Transactions of the Royal Society,' vol. cxxvii. p. 215, I examined microscopically specimens of a great number of corals belonging to different genera, as well as many of the Gorgoniadæ, but have never succeeded in finding a single species of either of them which secreted silex as a material of its skeleton. Nothing was more common than to find a mixture of various forms of siliceous sponge-spicula deeply buried in the interstices of corals, and minute siliceous coating-sponges covering the bases and sometimes surrounding the stems of Gorgonias; but in both cases such spicula were decidedly either adventitious or parasitical; and I think I may safely challenge Dr. Gray to produce a single instance of either a true coral or a Gorgonia secreting siliceous matter as the base of its skeleton, or, indeed, of any other polype-bearing animal the earthy base of which is siliceous. The fact of the presence of siliceous spicula in the inner coat of what he terms the bark of *Hyalonema* should have warned him that it could not belong to either of the genera "*Corticaria*" (qu. *Corticifera*) or *Zoanthus*. Excepting among the Protozoa, I do not think Dr. Gray will find a single animal which secretes silex in its skeleton.

Dr. Gray writes, p. 290, that M. Barboza du Bocage states that the basal portion of the axis which is inserted in the sponge in some of the Japanese specimens is covered with the polype-bearing bark, the polypes near the base being smaller; but the passage quoted from M. Barboza du Bocage's paper by no means bears out this assertion of Dr. Gray. The quotation is as follows:—"Chez ces derniers (les exemplaires du Portugal) le corium polypigerum enveloppe l'axis d'une manière uniforme, il recouvre parfaitement l'une des extrémités de l'axis, la plus

étroite, et de là il s'étend sans aucune interruption jusqu'aux  $\frac{2}{3}$  ou les  $\frac{3}{5}$  de la longueur totale. Les polypes placés sur l'extrémité de l'axis sont les plus petits de tous (Proc. Zool. Soc. 1865, p. 663, and 1864, t. 22. fig. 2)." This misunderstanding of the passage quoted by Dr. Gray tends more than ever to confuse our ideas on the subject, whether we consider *Hyalonema* a coral, a zoanthoid polype, or a sponge. M. Barboza du Bocage certainly does not mean in the passage to infer that the thin end of the column covered with protuberances was the basal end, and was accordingly originally immersed in the basal spongy mass.

Dr. Gray has been pleased to say of my recently published Monograph of the British Sponges, "But all the descriptions of this work are so indistinct and crowded with technicalities peculiar to the author, that they are very difficult to understand, and render a new examination of the species and a new work on the subject requisite." I regret that I cannot furnish the learned author with any means of comprehending my descriptions except those contained in my volumes; but it is consolatory to know that there are other naturalists who can do so. No one has advocated the necessity of every newly discovered animal having a definite name more strongly than Dr. Gray; but that which is applicable to the whole animal does not, in his opinion, seem equally so to its parts. On this question I must beg leave to differ from him. I found a great portion of the British Sponges were new to our Fauna, and nearly all of their parts without names by which to designate and describe them. I was therefore compelled to name and describe both the component parts and the species; and whether I have or have not succeeded in employing suitable designations, I can assure the author of the paper that I should hail the accomplishment of a similar work to mine, exhibiting a greater amount of talent and research, with unfeigned pleasure, for the sake of the advancement of a branch of natural history the study of which has afforded me many years of pleasure and satisfaction.

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LI.—*On the Systematic Position of the Pronghorn* (*Antilocapra americana*). By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to the Zoological Society of London\*.

THE author stated that his chief object in the present communication was to bring into more prominent notice a very impor-

\* Abstract of a paper read before the British Association, Section D., Aug. 23, 1866. Communicated by the Author.